IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Canceled)

2. (Canceled)

3. (Currently Amended) A method of transmitting a digital signal from a transmitter to a receiver in a radio system, the method comprising:

the transmitter transmitting at least a part of the signal via at least two different transmit antenna paths; and

the receiver receiving the signal;

wherein the transmit power of the signals to be transmitted via different transmit antenna paths is weighted with respect to one another in the transmitter using changeable weighting coefficients determined for each transmit antenna path;

wherein the receiver performs measurements on the received signals that were transmitted via the different transmit antenna paths;

wherein the receiver signals to the transmitter the weighting coefficient data formed on the basis of the measurements;

wherein the transmitter forms weighting coefficients using the weighting coefficient data signaling;

wherein the transmitter forms a quality value for the weighting coefficient data signaling it has received, the quality value for the weighting coefficient data signaling relating to the quality of the channel in which the weighting coefficient data is signaled from the receiver to the transmitter; and

wherein the transmitter forms weighting coefficients using the quality value of the weighting coefficient data signaling and the signaling itself.

4. (Previously Presented) The method of claim 3, wherein the values of the weighting coefficients are predetermined, and the predetermined values of the weighting

coefficients are divided into different groups, each of which has a particular weighting coefficient for each transmit antenna path, the weighting coefficient data signaling comprising information about which group of weighting coefficients the receiver wants to be used.

5. (Previously Presented) The method of claim 3, wherein the weighting coefficient data comprises information about the transmit antenna path via which the signal with the best quality value was transmitted.

6. (Previously Presented) The method of claim 3, wherein the weighting coefficient data comprises differential information indicating how the ratios of the weighting coefficients for the transmit antenna paths are changed differentially.

7. (Previously Presented) The method of claim 3, wherein the weighting coefficient data comprises at least one channel parameter measured by the receiver.

8. (Previously Presented) A method of transmitting a digital signal from a transmitter to a receiver in a radio system, the method comprising:

the transmitter transmitting at least a part of the signal via at least two different transmit antenna paths; and

the receiver receiving the signal;

wherein the transmit power of the signals to be transmitted via different transmit antenna paths is weighted with respect to one another in the transmitter using changeable weighting coefficients determined for each transmit antenna path;

wherein the receiver performs measurements on the received signals that were transmitted via the different transmit antenna paths;

wherein the receiver signals to the transmitter the weighting coefficient data formed on the basis of the measurements;

wherein the transmitter forms weighting coefficients using the weighting coefficient data signaling; and

wherein the transmit antenna paths are connected to at least two different base stations of a network part in the radio system.

9. (Previously Presented) The method of claim 3, wherein the weighting coefficients used in the transmission are signaled to the receiver.

10. (Previously Presented) The method of claim 9, wherein the weighting coefficients are signaled to the receiver using an identification sequence which is inserted in the transmitted signal and which varies depending on the weighting of the signal.

11. (Previously Presented) The method of claim 9, wherein the weighting coefficients are signaled to the receiver using modulation, spreading or coding of the signal specifically for each transmit antenna path.

12. (Previously Presented) The method of claim 4, wherein identification data for the group of weighting coefficients used in the transmission is signaled to the receiver using identification bits inserted in the transmitted signal.

13. (Previously Presented) A method of transmitting a digital signal from a transmitter to a receiver in a radio system, the method comprising:

the transmitter transmitting at least a part of the signal via at least two different transmit antenna paths; and

the receiver receiving the signal;

wherein the transmit power of the signals to be transmitted via different transmit antenna paths is weighted with respect to one another in the transmitter using changeable weighting coefficients determined for each transmit antenna path;

wherein the receiver performs measurements on the received signals that were transmitted via the different transmit antenna paths;

wherein the receiver signals to the transmitter the weighting coefficient data formed on the basis of the measurements;

wherein the transmitter forms weighting coefficients using the weighting coefficient data signaling;

wherein the transmitter forms a quality value for the weighting coefficient data signaling it has received;

wherein the transmitter forms weighting coefficients using the quality value of the weighting coefficient data signaling and the signaling itself; and

wherein, when the quality value for signaling falls below a predetermined threshold value, the weighting coefficients are not changed.

14. (Previously Presented) A method of transmitting a digital signal from a transmitter to a receiver in a radio system, the method comprising:

the transmitter transmitting at least a part of the signal via at least two different transmit antenna paths; and

the receiver receiving the signal;

wherein the transmit power of the signals to be transmitted via different transmit antenna paths is weighted with respect to one another in the transmitter using changeable weighting coefficients determined for each transmit antenna path;

wherein the receiver performs measurements on the received signals that were transmitted via the different transmit antenna paths;

wherein the receiver signals to the transmitter the weighting coefficient data formed on the basis of the measurements;

wherein the transmitter forms weighting coefficients using the weighting coefficient data signaling;

wherein the transmitter forms a quality value for the weighting coefficient data signaling it has received;

wherein the transmitter forms weighting coefficients using the quality value of the weighting coefficient data signaling and the signaling itself; and

wherein, when the quality value for signaling falls below a predetermined threshold value, the weighting coefficients are set to an equal value over each transmit antenna path.

15. (Previously Presented) A method of transmitting a digital signal from a transmitter to a receiver in a radio system, the method comprising:

the transmitter transmitting at least a part of the signal via at least two different transmit antenna paths; and

the receiver receiving the signal;

wherein the transmit power of the signals to be transmitted via different transmit antenna paths is weighted with respect to one another in the transmitter using changeable weighting coefficients determined for each transmit antenna path;

wherein the receiver performs measurements on the received signals that were transmitted via the different transmit antenna paths;

wherein the receiver signals to the transmitter the weighting coefficient data formed on the basis of the measurements;

wherein the transmitter forms weighting coefficients using the weighting coefficient data signaling;

wherein the transmitter forms a quality value for the weighting coefficient data signaling it has received;

wherein the transmitter forms weighting coefficients using the quality value of the weighting coefficient data signaling and the signaling itself; and

wherein, when the quality value for signaling exceeds a predetermined threshold value, the weighting coefficients are changed.

16. (Previously Presented) The method of claim 3, wherein signals to be transmitted via two different transmit antenna paths are as mutually orthogonal as possible.

17. (Previously Presented) The method of claim 16, wherein the orthogonality is implemented by using a different spreading or channel code for each transmit antenna path.

18. (Previously Presented) The method of claim 16, wherein the orthogonality is implemented by using a different transmission frequency for each transmit antenna path.

19. (Previously Presented) The method of claim 16, wherein the orthogonality is implemented by using a different slot for each transmit antenna path.

20. (Previously Presented) The method of claim 3, wherein the signal is coded in order to minimize transmission errors in the transmission channel.

21. (Previously Presented) The method of claim 20, wherein the coding is space-time coding.

22. (Previously Presented) The method of claim 21, wherein the space-time coding is space-time block coding.

23. (Previously Presented) The method of claim 21, wherein the space-time coding is space-time trellis coding.

24. (Previously Presented) The method of claim 3, wherein the transmit antenna paths are connected to one base station of the network part in the radio system.

25. (Previously Presented) The method of claim 3, wherein the transmitter is situated in a radio network subsystem of the radio system network part, and the receiver is situated in a user equipment of the radio system.

26. (Previously Presented) The method of claim 3, wherein a user equipment of the radio system determines the weighting coefficients used by the network part of the radio system in transmitting to the user equipment in question.

27. (Previously Presented) The method of claim 3, wherein the network part of the radio system determines itself the weighting coefficients it uses in transmission.

28. (Previously Presented) The method of claim 27, wherein the network part of the radio system takes into account the loading of each power amplifier over the transmit antenna path when it makes the decision.

29. (Previously Presented) The method of claim 3, wherein a transmit antenna path is implemented using an antenna structure that provides phasing.

30. (Previously Presented) The method of claim 29, wherein the phasing is determined using channel parameters signaled by the receiver.

31. (Previously Presented) The method of claim 29, wherein the phasing of transmission is determined using signals that have arrived at the same antenna elements.

32. (Previously Presented) A method of transmitting a digital signal from a transmitter to a receiver in a radio system, the method comprising:

the transmitter transmitting at least a part of the signal via at least two different transmit antenna paths; and

the receiver receiving the signal;

wherein the transmit power of the signals to be transmitted via different transmit antenna paths is weighted with respect to one another in the transmitter using changeable weighting coefficients determined for each transmit antenna path,

wherein a transmit antenna path is implemented using an antenna structure that provides phasing; and

wherein transmissions are sent from at least one antenna element with at least two different phases or antenna beams, such that signals to be transmitted with different phases have different pilot sequences, identification sequences, structures or different coding.

33. (Canceled)

34. (Canceled)

35. (Currently Amended) A radio system for transmitting a digital signal, the radio system comprising:

a transmitter for transmitting a signal;

at least two transmit antenna paths that can be connected to the transmitter;

a receiver for receiving the signal;

wherein the transmitter comprises

changing means for changing the weighting coefficients determined for each transmit antenna path with respect to one another, and

weighting means for weighting the transmit power of the signals to be transmitted via different transmit antenna paths using weighting coefficients that can be changed with respect to one another,

wherein the receiver comprises means for performing measurements on the received signals that were transmitted via the different transmit antenna paths, and means for signaling to the transmitter the weighting coefficient data formed on the basis of the measurements; and

the transmitter further comprises means for receiving the weighting coefficient data signaling, and wherein the changing means form weighting coefficients using the weighting coefficient data signaling, and

wherein the transmitter comprises means for forming a quality value for the weighting coefficient data signaling it has received, the quality value for the weighting coefficient data signaling relating to the quality of the channel in which the weighting coefficient data is signaled from the receiver to the transmitter, and the changing means form weighting coefficients using the quality value of the weighting coefficient data signaling and the signaling itself.

36. (Previously Presented) The radio system of claim 35, wherein the values of the weighting coefficients are predetermined, and the predetermined values of the weighting coefficients are divided into different groups, each of which has a particular weighting coefficient determined for each transmit antenna path, the weighting coefficient data signaling comprising information about which group of weighting coefficients the receiver wants to be used.

37. (Previously Presented) The radio system of claim 35, wherein the weighting coefficient data comprises information about the transmit antenna path via which the signal with the best quality value was transmitted.

38. (Previously Presented) The radio system of claim 35, wherein the weighting coefficient data comprises differential information indicating how the ratios of the weighting coefficients for the transmit antenna paths are changed differentially.

39. (Previously Presented) The radio system of claim 35, wherein the weighting coefficient data comprises at least one channel parameter measured by the receiver.

40. (Previously Presented) A radio system for transmitting a digital signal, comprising:

a transmitter for transmitting a signal;

at least two transmit antenna paths that can be connected to the transmitter;

a receiver for receiving the signal;

wherein the transmitter comprises:

changing means for changing the weighting coefficients determined for each transmit antenna path with respect to one another, and

weighting means for weighting the transmit power of the signals to be transmitted via different transmit antenna paths using coefficients that can be changed with respect to one another;

wherein the receiver comprises means for performing measurements on the received signals that were transmitted via the different transmit antenna paths, and means for signaling to the transmitter the weighting coefficient data formed on the basis of the measurements;

wherein the transmitter further comprises means for receiving the weighting coefficient data signaling, and the changing means form weighting coefficients using the weighting coefficient data signaling; and

wherein the transmit antenna paths are connected to at least two different base stations of a network part in the radio system.

41. (Previously Presented) The radio system of claim 35, wherein the transmitter comprises means for signaling the weighting coefficients used in the transmission to the receiver using pilot bits inserted in the transmitted signal.

42. (Previously Presented) The radio system of claim 36, wherein the transmitter comprises means for signaling to the receiver identification data for the group of weighting coefficients used in the transmission using pilot bits inserted in the transmitted signal.

43. (Previously Presented) A radio system for transmitting a digital signal, comprising:

a transmitter for transmitting a signal;

at least two transmit antenna paths that can be connected to the transmitter;

a receiver for receiving the signal;

wherein the transmitter comprises:

changing means for changing the weighting coefficients determined for each transmit antenna path with respect to one another; and

weighting means for weighting the transmit power of the signals to be transmitted via different transmit antenna paths using weighting coefficients that can be changed with respect to one another,

wherein the receiver comprises:

means for performing measurements on the received signals that were transmitted via the different transmit antenna paths; and

means for signaling to the transmitter the weighting coefficient data formed on the basis of the measurements;

wherein the transmitter further comprises:

means for receiving the weighting coefficient data signaling, wherein the changing means form weighting coefficients using the weighting coefficient data signaling;

means for forming a quality value for the weighting coefficient data signaling it has received, wherein the changing means form weighting coefficients using the quality value of the weighting coefficient data signaling and the signaling itself; and

wherein, when the quality value for signaling falls below a predetermined threshold value, the changing means do not change the weighting coefficients.

44. (Previously Presented) A radio system for transmitting a digital signal, comprising:

a transmitter for transmitting a signal;

at least two transmit antenna paths that can be connected to the transmitter;

a receiver for receiving the signal;

wherein the transmitter comprises:

changing means for changing the weighting coefficients determined for each transmit antenna path with respect to one another; and

weighting means for weighting the transmit power of the signals to be transmitted via different transmit antenna paths using weighting coefficients that can be changed with respect to one another,

wherein the receiver comprises:

means for performing measurements on the received signals that were transmitted via the different transmit antenna paths; and

means for signaling to the transmitter the weighting coefficient data formed on the basis of the measurements;

wherein the transmitter further comprises:

means for receiving the weighting coefficient data signaling, wherein the changing means form weighting coefficients using the weighting coefficient data signaling;

means for forming a quality value for the weighting coefficient data signaling it has received, wherein the changing means form weighting coefficients using the quality value of the weighting coefficient data signaling and the signaling itself; and

wherein, when the quality value for signaling falls below a predetermined threshold value, the changing means set the weighting coefficients to an equal value over each transmit antenna path.

45. (Previously Presented) A radio system for transmitting a digital signal, comprising:

a transmitter for transmitting a signal;

at least two transmit antenna paths that can be connected to the transmitter;

a receiver for receiving the signal;

wherein the transmitter comprises:

changing means for changing the weighting coefficients determined for each transmit antenna path with respect to one another; and

weighting means for weighting the transmit power of the signals to be transmitted via different transmit antenna paths using weighting coefficients that can be changed with respect to one another,

wherein the receiver comprises:

means for performing measurements on the received signals that were transmitted via the different transmit antenna paths; and

means for signaling to the transmitter the weighting coefficient data formed on the basis of the measurements;

wherein the transmitter further comprises:

means for receiving the weighting coefficient data signaling, wherein the changing means form weighting coefficients using the weighting coefficient data signaling;

means for forming a quality value for the weighting coefficient data signaling it has received, wherein the changing means form weighting coefficients using the quality value of the weighting coefficient data signaling and the signaling itself; and

wherein, when the quality value for signaling exceeds a predetermined threshold value, the changing means change the weighting coefficients.

46. (Previously Presented) The radio system of claim 35, wherein signals to be transmitted via two different transmit antenna paths are as mutually orthogonal as possible.

47. (Previously Presented) The radio system of claim 35, wherein the transmitter comprises means for coding the signal in order to minimize transmission errors in the transmission channel.

48. (Previously Presented) The radio system of claim 47, wherein the coding is space-time coding.

49. (Previously Presented) The radio system of claim 48, wherein the space-time coding is space-time block coding.

50. (Previously Presented) The radio system of claim 48, wherein the space-time coding is space-time trellis coding.

51. (Previously Presented) The radio system of claim 35, wherein the transmit antenna paths are connected to one base station of the network part of the radio system.

52. (Previously Presented) The radio system of claim 35, wherein the transmitter is situated in a radio network subsystem of the radio system network part, and the receiver is situated in a user equipment of the radio system.

53. (Previously Presented) The radio system of claim 35, wherein the user equipment of the radio system comprises means for determining the weighting coefficients used by the network part of the radio system in transmitting to the user equipment in question.

54. (Previously Presented) The radio system of claim 35, wherein the network part of the radio system comprises decision-making means for determining the weighting coefficients it uses in transmission.

55. (Previously Presented) The radio system of claim 54, wherein the decision-making means utilize data about the loading of a power amplifier of each transmit antenna path when they make a decision.

56. (Previously Presented) The radio system of claim 35, wherein a transmit antenna path is implemented using an antenna structure that provides phasing.

57. (Previously Presented) A radio system for transmitting a digital signal, the system comprising:

a transmitter for transmitting at least a part of the signal via at least two different transmit antenna paths; and

a receiver for receiving the signal;

wherein the transmit power of the signals to be transmitted via different transmit antenna paths is weighted with respect to one another in the transmitter using changeable weighting coefficients determined for each transmit antenna path,

wherein a transmit antenna path is implemented using an antenna structure that provides phasing; and

wherein transmissions are sent from at least one antenna element with at least two different phases or antenna beams.

58. (Previously Presented) The system of claim 57, wherein:

the signals to be transmitted with different phases have at least one differing characteristic including different pilot sequences, identification sequences, structures or different coding;

the receiver estimates beam channel parameters using that at least one differing characteristic,

the receiver combines the beam signals using that at least one differing characteristic,

the receiver calculates the weighting coefficient data for the beams using that at least one differing characteristic; and

the receiver signals the calculated weighting coefficient data to the transmitter.

59. (Previously Presented) A method of transmitting a digital signal from a transmitter to a receiver in a radio system, the method comprising:

the transmitter transmitting at least a part of the signal via at least two different transmit antenna paths; and

the receiver receiving the signal;

wherein the transmit power of the signals to be transmitted via different transmit antenna paths is weighted with respect to one another in the transmitter using changeable weighting coefficients determined for each transmit antenna path;

wherein transmit antenna paths form at least two different antenna beams, such that signals to be transmitted with different antenna beams have different parts of a space-time code, and wherein the different parts of the space-time code are weighted differently.

60. (Previously Presented) The method of claim 59, wherein different antenna beams have different pilot sequences, and the method further comprises:

estimating antenna beam channel parameters using the pilot sequences;

combining the antenna beam signals using the pilot sequences; and

calculating weighting coefficient data for the antenna beams using the pilot sequences; and

signaling the calculated weighting coefficient data to the transmitter.

61. (Previously Presented) The method of claim 60, wherein weighting coefficients for the antenna beams are formed at the transmitter.

62. (Previously Presented) The method of claim 59, wherein the receiver sends weighting coefficient data to the transmitter, and the transmitter forms the weighting coefficients for the antenna beams using the weighting coefficient data.

63. (Previously Presented) The method of claim 59, wherein the antenna beams are adaptive and controlled with at least one of uplink signaling and measurements.

64. (Currently Amended) A radio system for transmitting a digital signal, the system comprising:

a transmitter configured to transmit at least a part of the signal via at least two different transmit antenna paths; and

a receiver configured to receive the signal;

wherein the transmit power of the signals to be transmitted via different transmit antenna paths is weighted with respect to one another in the transmitter using [[a]] changeable weighting coefficients determined for each transmit antenna path;

wherein transmit antenna paths form at least two different antenna beams, such that signals to be transmitted with different antenna beams have different parts of a space-time code, and wherein the different parts of the space-time code are weighted differently ~~wherein transmissions are sent from at least one antenna element with at least two different phases or antenna beams, such that signals to be transmitted with different phases have different pilot sequences, identification sequences, structures or different coding, and wherein the different parts of the space-time code are weighted differently~~.

65. (Previously Presented) The system of claim 64, wherein:

different antenna beams have different pilot sequences,

antenna beam channel parameters are estimated in the receiver using the different pilot sequences,

antenna beam signals are combined in the receiver using the different pilot sequences; and

weighting coefficient data for the antenna beams is calculated using the different pilot sequences and signaled to the transmitter.

66. (Previously Presented) The system of claim 64, wherein weighting coefficients for the antenna beams are formed at the transmitter.

67. (Previously Presented) The system of claim 64, wherein the receiver signals to the transmitter weighting coefficient data, and the transmitter forms the weighting coefficients for the antenna beams using the signaled weighting coefficient data.

68. (Previously Presented) The system of claim 64, wherein the antenna beams are adaptive and controlled with at least one of uplink signaling and measurements.

69. (Previously Presented) A method of transmitting a digital signal from a transmitter to a receiver in a radio system, the method comprising:

the transmitter transmitting at least a part of the signal via at least two different transmit antenna paths; and

the receiver receiving the signal;

wherein the transmit power of the signals to be transmitted via different transmit antenna paths is weighted with respect to one another in the transmitter using changeable weighting coefficients determined for each transmit antenna path;

wherein the receiver performs measurements on the received signals that were transmitted via the different transmit antenna paths;

wherein the receiver signals to the transmitter the weighting coefficient data formed on the basis of the measurements;

wherein the transmitter forms weighting coefficients using the weighting coefficient data signaling; and

wherein the transmit antenna paths are connected to at least two different transmission sectors of a base station in the radio system.

70. (Previously Presented) The method of claim 69, wherein, the signals to be transmitted with different phases have at least one differing characteristic including different pilot sequences, identification sequences, structures or different coding and the method further comprises:

estimating beam channel parameters using that at least one differing characteristic,

combining the beam signals using that at least one differing characteristic,

calculating the receiver the weighting coefficient data for the beams using that at least one differing characteristic; and

signaling the calculated weighting coefficient data to the transmitter.

71. (Previously Presented) A radio system for transmitting a digital signal, comprising:

a transmitter configured to transmit a signal;

at least two transmit antenna paths that can be connected to the transmitter;

a receiver configured to receive the signal;

wherein the transmitter is configured to change the weighting coefficients determined for each transmit antenna path with respect to one another, and configured to weight the

transmit power of the signals to be transmitted via different transmit antenna paths using weighting coefficients that can be changed with respect to one another.

72. (Previously Presented) The radio system of claim 71, wherein the receiver is configured to perform measurements on the received signals that were transmitted via the different transmit antenna paths, and configured to signal to the transmitter the weighting coefficient data formed on the basis of the measurements and wherein the transmitter is configured to receive the weighting coefficient data signaling, and form weighting coefficients using weighting coefficient data signaling.

73. (Previously Presented) The radio system of claim 72, wherein the transmitter is configured to form a quality value for the weighting coefficient data signaling it has received, and configured to form weighting coefficients using the quality value of the weighting coefficient data signaling and the signaling itself.

74. (Previously Presented) The radio system of claim 72, wherein the values of the weighting coefficients are predetermined, and the predetermined values of the weighting coefficients are divided into different groups, each of which has a particular weighting coefficient determined for each transmit antenna path, the weighting coefficient data signaling comprising information about which group of weighting coefficients the receiver wants to be used.

75. (Previously Presented) The radio system of claim 72, wherein the weighting coefficient data comprises information about the transmit antenna path via which the signal with the best quality value was transmitted.

76. (Previously Presented) The radio system of claim 72, wherein the weighting coefficient data comprises differential information indicating how the ratios of the weighting coefficients for the transmit antenna paths are changed differentially.

77. (Previously Presented) The radio system of claim 72, wherein the weighting coefficient data comprises at least one channel parameter measured by the receiver.

78. (Previously Presented) A radio system for transmitting a digital signal, comprising:

a transmitter configured to transmit a signal;

at least two transmit antenna paths that can be connected to the transmitter;

a receiver configured to receive the signal;

wherein the transmitter is further configured to change the weighting coefficients determined for each transmit antenna path with respect to one another and configured to weight the transmit power of the signals to be transmitted via different transmit antenna paths using weighting coefficients that can be changed with respect to one another;

wherein the receiver is configured to perform measurements on the received signals that were transmitted via the different transmit antenna paths, and signal to the transmitter the weighting coefficient data formed based on the measurements;

wherein the transmitter is further configured to receive the weighting coefficient data signaling, and to form weighting coefficients using the weighting coefficient data signaling; and

wherein the transmit antenna paths are connected to at least two different base stations of a network part in the radio system.

79. (Previously Presented) The radio system of claim 71, wherein the transmitter is further configured to signal the weighting coefficients used in the transmission to the receiver using pilot bits inserted in the transmitted signal.

80. (Previously Presented) The radio system of claim 74, wherein the transmitter is further configured to signal to the receiver identification data for the group of weighting coefficients used in the transmission using pilot bits inserted in the transmitted signal.

81. (Previously Presented) A radio system for transmitting a digital signal, comprising:

a transmitter configured to transmit a signal;

at least two transmit antenna paths that can be connected to the transmitter;

a receiver configured to receive the signal;

wherein the transmitter is further configured to change the weighting coefficients determined for each transmit antenna path with respect to one another, and configured to

weight the transmit power of the signals to be transmitted via different transmit antenna paths using weighting coefficients that can be changed with respect to one another,

wherein the receiver is further configured to perform measurements on the received signals that were transmitted via the different transmit antenna paths and configured to signal to the transmitter the weighting coefficient data formed based on the measurements;

wherein the transmitter is further configured to receive the weighting coefficient data signaling, to form weighting coefficients using the weighting coefficient data signaling; and to form a quality value for the weighting coefficient data signaling it has received, wherein the weighting coefficients are formed using the quality value of the weighting coefficient data signaling and the signaling itself; and

wherein, when the quality value for signaling falls below a predetermined threshold value, the changing means do not change the weighting coefficients.

82. (Previously Presented) A radio system for transmitting a digital signal, comprising:

a transmitter is configured to transmit a signal;

at least two transmit antenna paths that can be connected to the transmitter;

a receiver configured to receive the signal;

wherein the transmitter is further configured to change the weighting coefficients determined for each transmit antenna path with respect to one another and configured to weight the transmit power of the signals to be transmitted via different transmit antenna paths using weighting coefficients that can be changed with respect to one another,

wherein the receiver is configured to perform measurements on the received signals that were transmitted via the different transmit antenna paths, and signal to the transmitter the weighting coefficient data formed based on the measurements;

wherein the transmitter is further configured to receive the weighting coefficient data signaling, to form weighting coefficients using the weighting coefficient data signaling, and to form a quality value for the weighting coefficient data signaling it has received, wherein the weighting coefficients are formed using the quality value of the weighting coefficient data signaling and the signaling itself; and

wherein, when the quality value for signaling falls below a predetermined threshold value, the weighting coefficients is set to an equal value over each transmit antenna path.

83. (Previously Presented) A radio system for transmitting a digital signal, comprising:

a transmitter configured to transmit a signal;

at least two transmit antenna paths that can be connected to the transmitter;

a receiver configured to receive the signal;

wherein the transmitter is further configured to change the weighting coefficients determined for each transmit antenna path with respect to one another and to weight the transmit power of the signals to be transmitted via different transmit antenna paths using weighting coefficients that can be changed with respect to one another,

wherein the receiver is further configured to perform measurements on the received signals that were transmitted via the different transmit antenna paths and configured to signal to the transmitter the weighting coefficient data formed based on the measurements;

wherein the transmitter is further configured to receive the weighting coefficient data signaling, to form weighting coefficients using the weighting coefficient data signaling, and to form a quality value for the weighting coefficient data signaling it has received, wherein the weighting coefficients are formed using the quality value of the weighting coefficient data signaling and the signaling itself; and

wherein, when the quality value for signaling exceeds a predetermined threshold value, the weighting coefficients are changed.

84. (Previously Presented) The radio system of claim 71, wherein signals to be transmitted via two different transmit antenna paths are as mutually orthogonal as possible.

85. (Previously Presented) The radio system of claim 71, wherein the transmitter is further configured to code the signal in order to minimize transmission errors in the transmission channel.

86. (Previously Presented) The radio system of claim 85, wherein the coding is space-time coding.

87. (Previously Presented) The radio system of claim 86, wherein the space-time coding is space-time block coding.

88. (Previously Presented) The radio system of claim 86, wherein the space-time coding is space-time trellis coding.

89. (Previously Presented) The radio system of claim 71, wherein the transmit antenna paths are connected to one base station of the network part of the radio system.

90. (Previously Presented) The radio system of claim 71, wherein the transmitter is situated in a radio network subsystem of the radio system network part, and the receiver is situated in a user equipment of the radio system.

91. (Previously Presented) The radio system of claim 71, wherein the user equipment of the radio system is configured to determine the weighting coefficients used by the network part of the radio system in transmitting to the user equipment in question.

92. (Previously Presented) The radio system of claim 71, wherein the network part of the radio system is configured to determine the weighting coefficients it uses in transmission.

93. (Previously Presented) The radio system of claim 91, wherein the user equipment utilizes data about the loading of a power amplifier of each transmit antenna path.

94. (Previously Presented) The radio system of claim 71, wherein a transmit antenna path is implemented using an antenna structure that provides phasing.

95. (Previously Presented) A transmitter for transmitting a digital signal in a radio system, the transmitter comprising:

changing means for changing the weighting coefficients determined for each of at least two transmit antenna paths with respect to one another, and

weighting means for weighting the transmit power of the signals to be transmitted to a receiver via different transmit antenna paths using weighting coefficients that can be changed with respect to one another; and

means for receiving weighting coefficient data signaling sent by the receiver, wherein the changing means form weighting coefficients using the weighting coefficient data signaling, and

means for forming a quality value for the weighting coefficient data signaling it has received, and wherein the changing means form weighting coefficients using the quality value of the weighting coefficient data signaling and the signaling itself.

96. (Previously Presented) The transmitter of claim 95, wherein the values of the weighting coefficients are predetermined, and the predetermined values of the weighting coefficients are divided into different groups, each of which has a particular weighting coefficient determined for each transmit antenna path, the weighting coefficient data signaling comprising information about which group of weighting coefficients the receiver wants to be used.

97. (Previously Presented) The transmitter of claim 95, wherein the weighting coefficient data comprises information about the transmit antenna path via which the signal with the best quality value was transmitted.

98. (Previously Presented) The radio system of claim 95, wherein the weighting coefficient data comprises differential information indicating how the ratios of the weighting coefficients for the transmit antenna paths are changed differentially.

99. (Previously Presented) The radio system of claim 95, wherein the weighting coefficient data comprises at least one channel parameter measured by the receiver.

100. (Previously Presented) A receiver that receives a digital signal in a radio system, the receiver comprising:

means for receiving digital signals from a transmitter via one of at least two transmit antenna paths, the digital signals having been transmitted using transmission power that is weighted by the transmitter using weighting coefficients that can be changed with respect to one another;

means for performing measurements on the received signals that were transmitted via the different transmit antenna paths, and means for signaling to the transmitter weighting coefficient data formed based on the measurements; wherein

the signaled weighting coefficient data enables the transmitter to form a quality value for the weighting coefficient data signaling it has received, and wherein the transmitter forms weighting coefficients using the quality value of the weighting coefficient data signaling and the signaling itself.

As claim 64 is directed to a radio system, please draft also two new independent claims claiming only the transmitter, one with the "means for" language and the other without.

101. (New) A transmitter for use in a radio system, the transmitter comprising:

means for transmitting at least a part of a digital signal via at least two different transmit antenna paths; and

means for weighting the transmit power of the signals to be transmitted via different transmit antenna paths with respect to one another using changeable weighting coefficients determined for each transmit antenna path;

wherein transmit antenna paths form at least two different antenna beams, such that signals to be transmitted with different antenna beams have different parts of a space-time code, and wherein the different parts of the space-time code are weighted differently.

102. (New) A transmitter for use in a radio system, the transmitter comprising:

a plurality of transmit antenna paths configured to transmit at least a part of the signal; and

wherein the transmit power of the signals to be transmitted via different transmit antenna paths is weighted with respect to one another in the transmitter using a changeable weighting coefficients determined for each transmit antenna path, wherein, transmit antenna paths form at least two different antenna beams, such that signals to be transmitted with different antenna beams have different parts of a space-time code, and wherein the different parts of the space-time code are weighted differently.